

Terms in Claims

Supporting Language in the Specification

Terms in Claims	Supporting Language in the Specification
<p>Claim 4. (NEW) An air conditioning or refrigeration system comprising:</p> <p>a compressor having a refrigeration fluid suction port and a refrigeration fluid discharge port; and</p> <p>a valve in fluid communication with the compressor,</p> <p>the valve being operative to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.</p>	<p>Abstract; Fig. 1</p> <p>See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.</p> <p>Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48</p> <p>Column 1, lines 32-35; Column 2, lines 41-45</p>
<p>Claim 5. (NEW) The air conditioning or refrigeration system of claim 4 further comprising</p> <p>a capacity controller operative to generate a control signal corresponding to desired capacity modulation</p> <p>and operatively connected to the valve to send capacity control signals to cycle the valve with a cycling time shorter than the response time of the system to modulate compressor capacity.</p>	<p>See microprocessor controller 100 in Fig 1; Column 2, line 22-23</p> <p>Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48</p>
<p>Claim 6. (NEW) The air conditioning or refrigeration system of claim 4</p> <p>wherein the valve is cycled between a fully open and a fully closed position.</p>	<p>Column 1, lines 25-27</p>
<p>Claim 7. (NEW) The air conditioning or refrigeration system of claim 5 wherein</p> <p>the controller comprises a microprocessor.</p>	<p>See microprocessor controller 100 in Fig 1; Column 2, lines 22-23</p>

Table I

Terms in Claims

Supporting Language in the Specification

Claim 8. (NEW) The air conditioning or refrigeration system of claim 4 wherein the valve is a solenoid valve.	Column 1, lines 25-27
Claim 9. (NEW) An air conditioning or refrigeration system comprising: a compressor	Abstract; Fig. 1
having a refrigeration fluid suction port	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.
and a refrigeration fluid discharge port,	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
being operative to compress refrigeration fluid received via the suction port and discharged via the discharge port;	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
a refrigerant flow line operative to carry refrigeration fluid and in fluid communication with the compressor;	Fig. 1; Column 1, line 65 to Column 2, line 25
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3
a valve in the refrigerant flow line which is operatively connected to the controller to receive capacity control signals from the controller and	See microprocessor controller 100 in Fig 1; Column 2, line 22-23
operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.	Abstract; Fig. 1; Column 1, line 26-30; Column 2, lines 26-48 Column 1, lines 32-35; Column 2, lines 41-45

Table I

Terms in Claims

Supporting Language in the Specification

Claim 14. (NEW) An air conditioning or refrigeration system comprising:	Abstract; Fig. 1
a compressor	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc
having a refrigeration fluid suction port	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
and a refrigeration fluid discharge port,	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
being operative to compress refrigeration fluid received via the suction port and discharged via the discharge port;	Fig. 1; Column 1, line 65 to Column 2, line 25
a refrigerant flow line operative to carry refrigeration fluid and in fluid communication with the compressor;	See Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
a solenoid valve in the refrigerant flow line	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
which is operatively connected to the controller to receive capacity control signals from the controller and	See connecting lines shown in Fig. 1 between microprocessor controller 100 and the valve, e.g. valve 52, valve 54, and/or valve 56
operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.	Column 1, lines 25-27

Table I

Terms in Claims

Supporting Language in the Specification

Claim 15. (NEW) The system of claim 14 wherein the system capacity controller comprises a microprocessor.	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
Claim 16. (NEW) The system of claim 14 wherein the solenoid valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.	Column 2, lines 46-48

Table I

Terms in Claims

Supporting Language in the Specification

Claim 17. (NEW) A capacity modulated compressor for an air conditioning or refrigeration system having a refrigerant flow line, comprising:	Abstract; Fig. 1; Summary
a compressor housing comprising a compression chamber,	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.
at least one refrigerant injection port operative to pass refrigerant to the compression chamber, and	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
at least one refrigerant discharge port operative to pass compressed refrigerant from the compression chamber;	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
a valve operatively connected to the controller to receive capacity control signals from the controller and	Abstract; Fig. 1; Column 1, lines 26-30; Column 2; lines 22-48
operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.	Column 1, lines 32-35; Column 2, lines 41-45

Table I

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Terms in Claims

Supporting Language in the Specification

Claim 24. (NEW) A capacity modulated compressor for an air conditioning or refrigeration system having a refrigerant flow line, comprising:	Abstract; Fig. 1; Summary
a compressor housing comprising a compression chamber,	Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.
at least one refrigerant injection port operative to pass refrigerant to the compression chamber, and	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
at least one refrigerant discharge port operative to pass compressed refrigerant from the compression chamber;	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
a solenoid valve operatively connected to the controller to receive capacity control signals from the controller and	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.	Column 1, lines 25-27

Table I

Terms in Claims

Supporting Language in the Specification

Claim 29. (NEW) A capacity modulated compressor comprising:	Abstract; Fig. 1, Summary
a compressor having a suction inlet for supplying suction gas to the compressor;	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, lines 1-5; Column 2, line 27; Column 2, line 64, etc.
a valve provided in the suction gas flow path to the compressor,	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
the valve being operable between open and closed positions to cyclically allow and prevent flow of suction gas into the compressor;	See Column 1, lines 33-35; Column 2, lines 44-45
a controller for actuating the valve between the open and closed positions,	See microprocessor controller 100 in Fig. 1; Column 2, lines 22-23
the controller being operative to cycle the valve such that its cycle time is shorter than the response time of the system to modulate compressor capacity.	Column 1, lines 32-35; Column 2, lines 41-45
Claim 30. (NEW) The capacity modulated compressor of claim 29 wherein the valve is positioned in close proximity to the compressor.	Abstract; Summary; Fig. 1

Table I

Supporting Language in the Specification

Terms in Claims

Claim 31. (NEW) The capacity modulated compressor of claim 29 wherein the valve is a bidirectional valve.	Column 1, lines 25-27
Claim 32. (NEW) The capacity modulated compressor of claim 29 wherein the valve is a solenoid valve.	Column 1, lines 25-27

Table I

Terms in Claims

Supporting Language in the Specification

Claim 33. (NEW) A method of modulating the capacity of a compressor in an air conditioning or refrigeration system, comprising	Column 1, lines 32-33; Column 2, lines 41-45
cycling a valve, in fluid communication with the compressor, using a cycle time shorter than the response time of the system to modulate compressor capacity.	Fig. 1; Column 1, lines 32-35; Column 2, lines 41-45
Claim 34. (NEW) The method of claim 33 wherein the valve is a solenoid valve.	Column 1, lines 25-27
Claim 35. (NEW) A method of modulating the capacity of a compressor in a closed refrigerant circulating system, said compressor comprising a compression chamber having a port connected to a refrigerant line of the system through which refrigerant is supplied to the compression chamber, comprising:	Column 1, lines 32-33; Column 2, lines 41-45; Fig. 1
rapidly cycling a solenoid valve disposed in the refrigerant line upstream of said port between its fully open position and its fully closed position to modulate compressor capacity.	Fig. 1; Column 1, lines 25-27

Table II

Terms in Claims

Supporting Language in the Specification

Claim 4. (NEW) An air conditioning or refrigeration system comprising:	Abstract; Fig. 1
a compressor having a refrigeration fluid suction port and a refrigeration fluid discharge port; and	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.
a valve in fluid communication with the compressor,	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
the valve being operative to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.	Column 1, lines 32-35; Column 2, lines 41-45
Claim 5. (NEW) The air conditioning or refrigeration system of claim 4 further comprising	
a capacity controller operative to generate a control signal corresponding to desired capacity modulation	See microprocessor controller 100 in Fig 1; Column 2, line 22-23
and operatively connected to the valve to send capacity control signals to cycle the valve with a cycling time shorter than the response time of the system to modulate compressor capacity.	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
Claim 6. (NEW) The air conditioning or refrigeration system of claim 4	
wherein the valve is cycled between a fully open and a fully closed position.	Column 1, lines 25-27
Claim 7. (NEW) The air conditioning or refrigeration system of claim 5 wherein	
the controller comprises a microprocessor.	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23

Table I

Terms in Claims

Supporting Language in the Specification

Claim 8. (NEW) The air conditioning or refrigeration system of claim 4 wherein the valve is a solenoid valve.	Column 1, lines 25-27
Claim 9. (NEW) An air conditioning or refrigeration system comprising:	Abstract; Fig. 1
a compressor	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.
having a refrigeration fluid suction port	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
and a refrigeration fluid discharge port,	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
being operative to compress refrigeration fluid received via the suction port and discharged via the discharge port;	Fig. 1; Column 1, line 65 to Column 2, line 25
a refrigerant flow line operative to carry refrigeration fluid and in fluid communication with the compressor;	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and	See microprocessor controller 100 in Fig 1; Column 2, line 22-23
a valve in the refrigerant flow line which is operatively connected to the controller to receive capacity control signals from the controller and	Abstract; Fig. 1; Column 1, line 26-30; Column 2, lines 26-48
operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.	Column 1, lines 32-35; Column 2, lines 41-45

Table I

Terms in Claims

Supporting Language in the Specification

<p>Claim 10. (NEW) The system of claim 9 wherein the valve is cycled between a fully open position and a fully closed position.</p>	<p>Column 1, lines 25-27</p>
<p>Claim 11. (NEW) The system of claim 9 wherein the system capacity controller comprises a microprocessor.</p>	<p>See microprocessor controller 100 in Fig 1; Column 2, lines 22-23</p>
<p>Claim 12. (NEW) The system of claim 9 wherein the valve is a solenoid valve.</p>	<p>Column 1, lines 25-27</p>
<p>Claim 13. (NEW) The system of claim 10 wherein the valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.</p>	<p>Column 2, lines 46-48</p>

Table I

Terms in Claims

Supporting Language in the Specification

Claim 14. (NEW) An air conditioning or refrigeration system comprising:		Abstract; Fig. 1
a compressor		
having a refrigeration fluid suction port		See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc
and a refrigeration fluid discharge port,		Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
being operative to compress refrigeration fluid received via the suction port and discharged via the discharge port;		Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
a refrigerant flow line operative to carry refrigeration fluid and in fluid communication with the compressor;		Fig. 1; Column 1, line 65 to Column 2, line 25
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and		See Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3
a solenoid valve in the refrigerant flow line		See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
which is operatively connected to the controller to receive capacity control signals from the controller and		Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.		See connecting lines shown in Fig. 1 between microprocessor controller 100 and the valve, e.g. valve 52, valve 54, and/or valve 56 Column 1, lines 25-27

Table I

Terms in Claims

Supporting Language in the Specification

Claim 15. (NEW) The system of claim 14 wherein the system capacity controller comprises a microprocessor.	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
Claim 16. (NEW) The system of claim 14 wherein the solenoid valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.	Column 2, lines 46-48

Table I

Terms in Claims

Supporting Language in the Specification

Claim 17. (NEW) A capacity modulated compressor for an air conditioning or refrigeration system having a refrigerant flow line, comprising:	Abstract; Fig. 1; Summary
a compressor housing comprising a compression chamber,	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.
at least one refrigerant injection port operative to pass refrigerant to the compression chamber, and	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
at least one refrigerant discharge port operative to pass compressed refrigerant from the compression chamber;	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
a valve operatively connected to the controller to receive capacity control signals from the controller and	Abstract; Fig. 1; Column 1, lines 26-30; Column 2; lines 22-48
operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.	Column 1, lines 32-35; Column 2, lines 41-45

Table I

Terms in Claims

Supporting Language in the Specification

<p>Claim 18. (NEW) The compressor of claim 17 wherein the valve is cycled between a fully closed position and a fully open position.</p>	<p>Column 1, lines 25-27</p>
<p>Claim 19. (NEW) The compressor of claim 17 wherein the valve is disposed in a refrigerant flow line upstream with respect to refrigerant flow to said at least one refrigerant injection port.</p>	<p>Fig. 1; Column 2, lines 6-25</p>
<p>Claim 20. (NEW) The compressor of claim 17 wherein the valve is mounted to the compressor housing at the refrigerant injection port.</p>	<p>See Abstract; Fig. 1, Column 1, lines 27-30</p>
<p>Claim 21. (NEW) The compressor of claim 17 wherein the system capacity controller comprises a microprocessor.</p>	<p>See microprocessor controller 100 in Fig 1; Column 2, lines 22-23</p>

Table I

Terms in Claims **Supporting Language in the Specification**

Claim 22. (NEW) The compressor of claim 17 wherein the valve is a solenoid valve.	Column 1, lines 25-27
Claim 23. (NEW) The compressor of claim 18 wherein the valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.	Column 2, lines 46-48

Table I

Terms in Claims

Supporting Language in the Specification

Claim 24. (NEW) A capacity modulated compressor for an air conditioning or refrigeration system having a refrigerant flow line, comprising:	Abstract; Fig. 1; Summary
a compressor housing comprising a compression chamber,	Fig. 1; Column 1, line 66; Column 2, line 5; Column 2, line 27; Column 2, line 64, etc.
at least one refrigerant injection port operative to pass refrigerant to the compression chamber, and	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
at least one refrigerant discharge port operative to pass compressed refrigerant from the compression chamber;	Abstract; Fig 1; Column 1, lines 26-30; Column 2, lines 1-3; Column 2, line 59 to Column 3, line 9
a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and	See microprocessor controller 100 in Fig 1; Column 2, lines 22-23
a solenoid valve operatively connected to the controller to receive capacity control signals from the controller and	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.	Column 1, lines 25-27

Table I

Terms in Claims

Supporting Language in the Specification

<p>Claim 25. (NEW) The compressor of claim 24 wherein the solenoid valve is disposed in a refrigerant flow line upstream with respect to refrigerant flow to said at least one refrigerant injection port.</p>	<p>Abstract; Fig. 1; Summary</p>
<p>Claim 26. (NEW) The compressor of claim 24 wherein the solenoid valve is mounted to the compressor housing at the refrigerant injection port.</p>	<p>Abstract; Fig. 1; Summary</p>
<p>Claim 27. (NEW) The compressor of claim 24 wherein the system capacity controller comprises a microprocessor.</p>	<p>See microprocessor controller 100 in Fig 1; Column 2, lines 22-23</p>
<p>Claim 28. (NEW) The compressor of claim 24 wherein the solenoid valve in the fully closed position permits a limited fluid flow through the refrigerant flow line.</p>	<p>Column 2, lines 46-48</p>

Table I

Terms in Claims

Supporting Language in the Specification

Claim 29. (NEW) A capacity modulated compressor comprising:	Abstract; Fig. 1, Summary
a compressor having a suction inlet for supplying suction gas to the compressor;	See compressor 12 in Fig. 1; Column 1, line 66; Column 2, lines 1-5; Column 2, line 27; Column 2, line 64, etc.
a valve provided in the suction gas flow path to the compressor,	Abstract; Fig. 1; Column 1, lines 26-30; Column 2, lines 26-48
the valve being operable between open and closed positions to cyclically allow and prevent flow of suction gas into the compressor;	See Column 1, lines 33-35; Column 2, lines 44-45
a controller for actuating the valve between the open and closed positions,	See microprocessor controller 100 in Fig. 1; Column 2, lines 22-23
the controller being operative to cycle the valve such that its cycle time is shorter than the response time of the system to modulate compressor capacity.	Column 1, lines 32-35; Column 2, lines 41-45
Claim 30. (NEW) The capacity modulated compressor of claim 29 wherein the valve is positioned in close proximity to the compressor.	Abstract; Summary; Fig. 1

Table I

Terms in Claims

Supporting Language in the Specification

Claim 33. (NEW) A method of modulating the capacity of a compressor in an air conditioning or refrigeration system, comprising	Column 1, lines 32-33; Column 2, lines 41-45
cycling a valve, in fluid communication with the compressor, using a cycle time shorter than the response time of the system to modulate compressor capacity.	Fig. 1; Column 1, lines 32-35; Column 2, lines 41-45
Claim 34. (NEW) The method of claim 33 wherein the valve is a solenoid valve.	Column 1, lines 25-27
Claim 35. (NEW) A method of modulating the capacity of a compressor in a closed refrigerant circulating system, said compressor comprising a compression chamber having a port connected to a refrigerant line of the system through which refrigerant is supplied to the compression chamber, comprising:	Column 1, lines 32-33; Column 2, lines 41-45; Fig. 1
rapidly cycling a solenoid valve disposed in the refrigerant line upstream of said port between its fully open position and its fully closed position to modulate compressor capacity.	Fig. 1; Column 1, lines 25-27

Table II

